(19) World Intellectual Property Organization International Bureau





(43) International Publication Date 10 February 2005 (10.02.2005)

PCT

(10) International Publication Number WO 2005/012172 A2

(51) International Patent Classification7:

C01B 31/02

(21) International Application Number:

PCT/US2004/024507

(22) International Filing Date:

29 July 2004 (29.07.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/490,755

29 July 2003 (29.07.2003)

(71) Applicants (for all designated States except US): WILLIAM MARSH RICE UNIVERSITY [US/US]; 6100 Main, Houston, TX 77005 (US). BOARD OF TRUSTEES OF UNIVERSITY OF ILLINOIS [US/US]; 352 Henry Administration Bldg., 506 S. Wright St., Urbana, IL 61801 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): STRANO, Michael

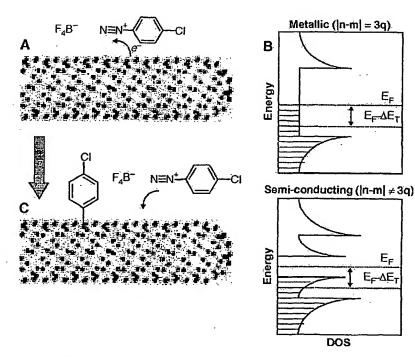
S. [US/US]; 1105 Baytowne Dr., No. 31, Champaign, IL 61822 (US). USREY, Monica [US/US]; 1709 Melrose Village Circle, Apt. 912, Urbana, IL 61801 (US). BARONE, Paul [US/US]; 2104 W. White, No. 97, Champaign, IL 61821 (US). DYKE, Christopher A. [US/US]; 19611 Spoonwood Dr., Humble, TX 77346 (US). TOUR, James M. [US/US]; 4625 Spruce Street, Bellaire, TX 77401 (US). KITTRELL, W. Carter [US/US]; 2400 North Braeswood, No. 215, Houston, TX 77030 (US). HAUGE, Robert H. [US/US]; 4031 Turnberry Circle, Houston, TX 77025 (US). SMALLEY, Richard E. [US/US]; 1816 Bolsover Street, Houston, TX 77005 (US).

- (74) Agents: GARSSON, Ross Spencer et al.; Winstead Sechrest & Minick P.C., P.O. Box 50784, Dallas, TX 75201-0784 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,

E

[Continued on next page]

(54) Title: SELECTIVE FUNCTIONALIZATION OF CARBON NANOTUBES



(57) Abstract: The present invention is directed toward methods of selectively functionalizing carbon nanotubes of a specific type or range of types, based on their electronic properties, using diazonium chemistry. The present invention is also directed toward methods of separating carbon nanotubes into populations of specific types or range(s) of types via selective functionalization and electrophoresis, and also to the novel compositions generated by such separations.

WO 2005/012172 A2



PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

- of inventorship (Rule 4.17(iv)) for US only

Published:

 without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.